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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/442,568	11/18/1999	FRANK DIMEO JR.'	401	6099
7590	11/01/2004		EXAMINER	
OLIVER A ZITZMANN ATMI INC 7 COMMERCE DRIVE DANBURY, CT 06810			PHAM, HOA Q	
			ART UNIT	PAPER NUMBER
			2877	

DATE MAILED: 11/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/442,568	DIMEO ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Hoa Q. Pham	2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 13 September 2004.  
 2a) This action is **FINAL**.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 30-32,35-45 and 71-74 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 30-32,35-45 and 71-74 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on 17 November 2003 is/are: a) accepted or b) objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____. | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
|   | 6) <input type="checkbox"/> Other: _____.                                   |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 30-32, 35-45 and 71-74 are rejected under 35 U.S.C. 102(e) as being anticipated by DiMeo, Jr. et al (DiMeo) (6,265,222)

The applied reference has a common inventor with the instant application.

Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention “by another,” or by an appropriate showing under 37 CFR 1.131.

Regarding claims 30 and 45, DiMeo (of record) discloses a thermal energy source (14) and the light source is inherent by the teachings that “the physical property of the hydrogen-interactive thin film that is altered in response to the presence of **hydrogen may be the optical transmissivity of the film to optical radiation incident on the sensor element**” (column 7, lines 41-48), an optical filter (26) which is illuminated with light from the light source and being operatively coupled to the thermal

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energy source such that the optical filter is heated by the thermal energy source (14) to an elevated temperature (column 5, lines 14-34 and lines 43-49); and a light detector disposed in light sensing relationship to the optical filter and detecting light passed through the filter and generates an output signal as an indication of the presence and/or concentration of hydrogen gas in the ambient environment (column 3, lines 1-4).

Regarding claim 32, Dimeo teaches that the thermal source is a resistive heater or thermometer (column 14, lines 46-53).

Regarding claims 71-72, see column 9, lines 52-57 for a rare earth metal thin film.

Regarding claim 73, see figure 3 of Dimeo for optical filter (26).

Regarding claim 74, see column 10, lines 45-50 of Dimeo for protective layer such as Pd, Pt, Ir, or alloy.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 31, 35-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dimeo in view of Ito et al (4,661,320).

Regarding claims 31 and 35, Ito et al (of record), from the same field of endeavor, teaches that the light source is a light emitting diode (LED) (column 2 lines

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58-59) and the detector is a photodiode (column 2, line 59). It would have been obvious to one having ordinary skill in the art at the time the invention was made to replace the light source and detector of Dimeo by a LED and photodiode as taught by Ito et al because it does not matter what types of light source and detector the device would function in the same manner.

Regarding claim 36, Dimeo teaches that the thin film is formed on the substrate by physical vapor deposition (column 9 lines 46-51). It would have been obvious to one having ordinary skill in the art at the time the invention was made to deposit the thin film on the substrate of a light source, thus reduce the cost of the device.

Regarding claim 37, see column 9, lines 46-51 of Dimeo for the barrier comprises yttrium thin film, trivalent rare earth metals.

Regarding claim 38, see column 10, line 3-14 of Dimeo.

Regarding claim 39, see column 9, line 55 of Dimeo for yttrium.

Regarding claims 40-41, see column 10, lines 15-17 of Dimeo.

Regarding claims 42-43, see claim 41 of Dimeo.

Regarding claim 44, Dimeo teaches that the thin film is overlaid by palladium (Pd), platinum (Pt), etc... (column 5, lines 7-13).

### ***Response to Arguments***

5. Applicant's arguments filed 9/13/04 have been fully considered but they are not persuasive.

a. Applicant's remarks, page 3, argues that "**nothing in DiMeo teaches or suggests that such detector is a light detector, much less that a light detector is disposed in light-sensing relationship to the optical filter (26) so that light from the light source can pass through the optical filter and impinge on the light detector, as required by claims 30-32, 35-45, and 71-74 of the present invention**". The argument is not deemed to be persuasive because DiMeo teaches "the change of physical property is detected when the optical filter (26) is exposed to hydrogen. Such detectable change of physical of physical properties may comprise **optical transmissivity, electrical property...etc...**" (column 2, lines 34-42 or column 7, lines 41-48) and "**the change in physical property of the hydrogen-interactive thin film is readily monitored, by appropriate detector**" (column 7, lines 49-51 or column 2, lines 43-46). Thus, it is inherent that light from a light source or ambient light passed through the optical filter and detected by detector.

b. Applicant's remarks, pages 3-4, argues that light that passes through the hydrogen sensor layer 26 is absorbed by one or more underlying layers and not impinging on a light detector. Applicant is noted that DiMeo et al teaches that the physical property of the hydrogen-interactive thin film that is altered in response to the presence of hydrogen may be the **optical transmissivity** of the film to **optical radiation incident on the sensor element** (column 7, lines 41-44). Thus, DiMeo et al clearly teaches that light passed through the thin film is impinging on a light detector.

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hoa Q. Pham whose telephone number is (571) 272-2426. The examiner can normally be reached on 7:30AM to 6 PM, Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr. can be reached on (571) 272-2800 ext. 77. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Hoa Q. Pham  
Primary Examiner  
Art Unit 2877

HP  
October 30, 2004